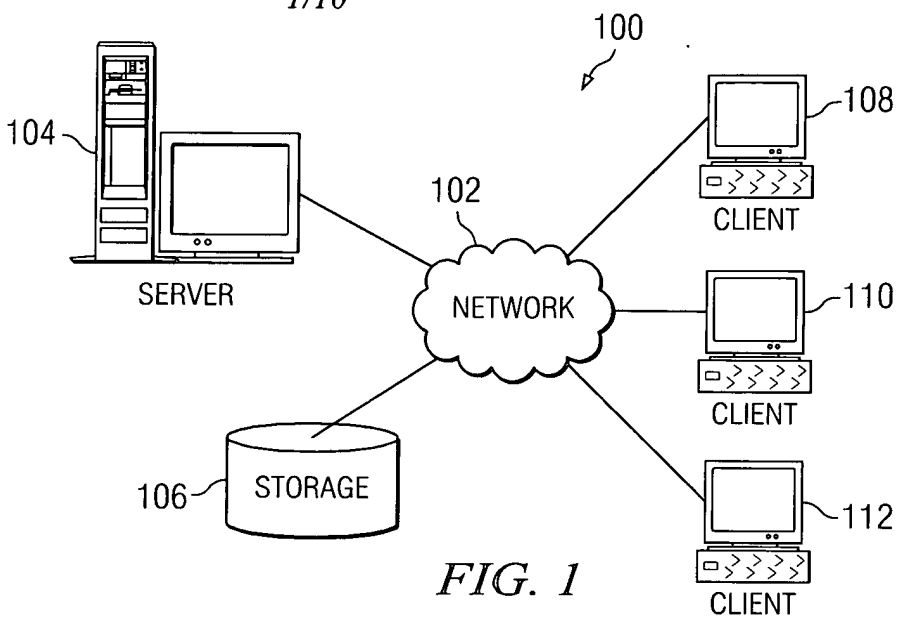
100
104
SERVER
102
NETWORK
108
CLIENT
110
CLIENT
112
CLIENT
106
STORAGE

FIG. 1

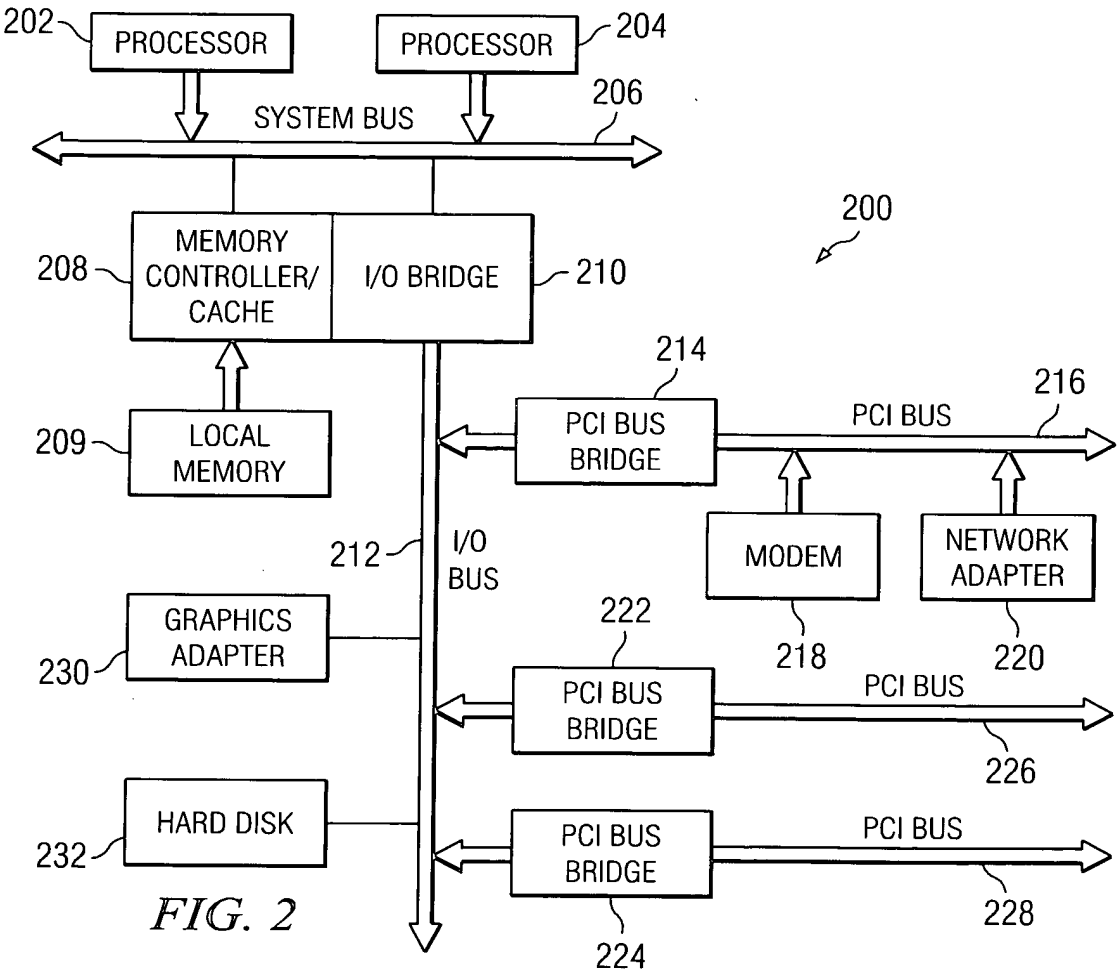
202
PROCESSOR
PROCESSOR
204
206
SYSTEM BUS
200
208
MEMORY CONTROLLER/ CACHE
I/O BRIDGE
210
214
209
LOCAL MEMORY
PCI BUS BRIDGE
216
PCI BUS
212
I/O BUS
MODEM
NETWORK ADAPTER
222
GRAPHICS ADAPTER
230
218
220
PCI BUS BRIDGE
PCI BUS
226
HARD DISK
232
PCI BUS BRIDGE
PCI BUS
228
224

FIG. 2

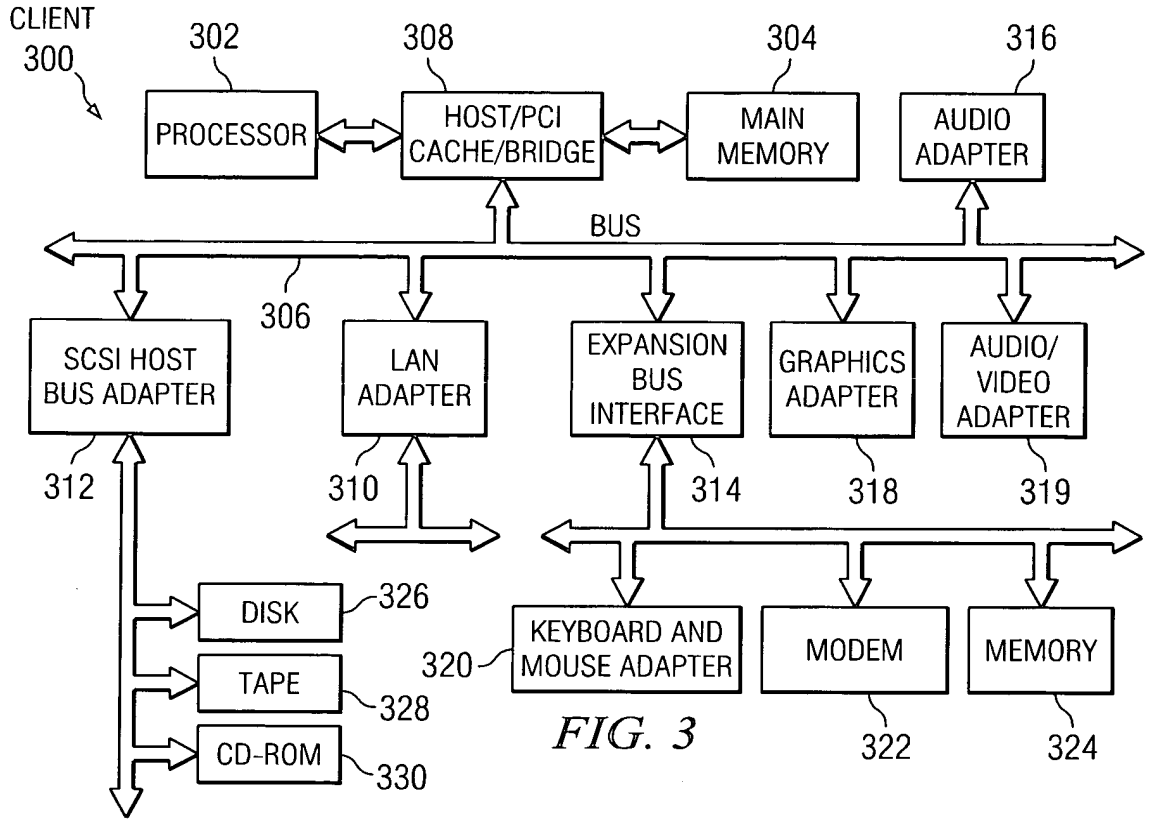

FIG. 3

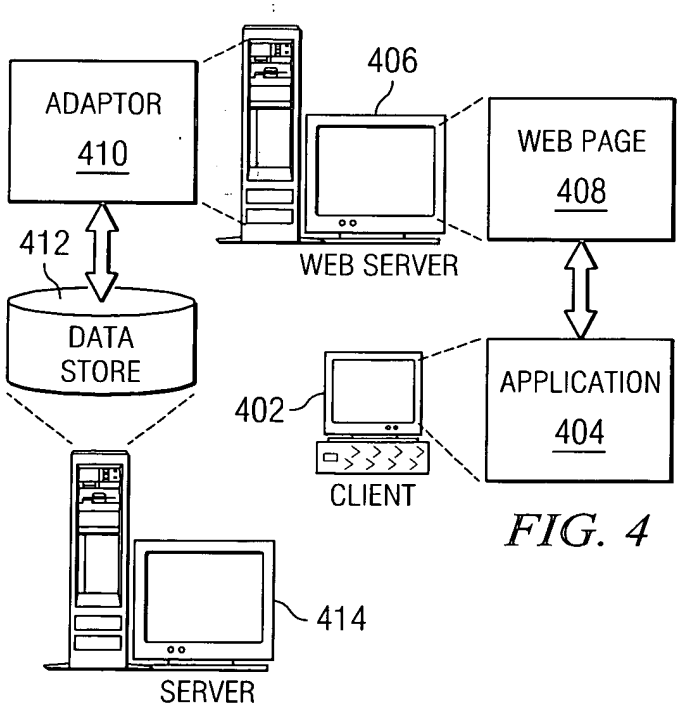

FIG. 4

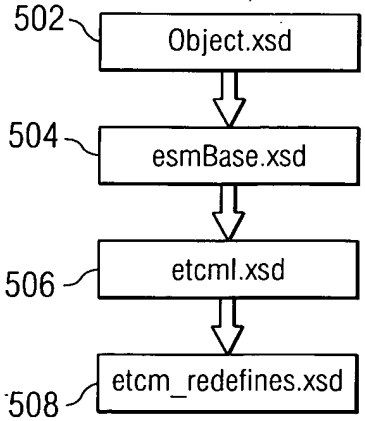

FIG. 5

FIG. 6A 3/10

```
<?xml version="1.0" encoding="UTF-8"?>                                    602
<xsd:schema version="1.0" xml:lang="en-US"
targetNamespace="http://www.ibm.com/esm"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://www.ibm.com/esm"
xmlns:etcML="http://www.ibm.com/v1/etcML" elementFormDefault="qualified"
attributeFormDefault="qualified">
<xsd:import namespace=http://www.ibm.com/v1/etcML
schemaLocation="etcml_redefines.xsd" />

<xsd:element name="esmML" type="etcML:etcRootType">                       604
    <xsd:annotation>                                                      602
        <xsd:documentation xml:lang="en-us">Root element for our new
        extended esm language.</xsd:documentation>
    </xsd:annotation>
</xsd:element>

<xsd:complexType name="ESMResponseBodyType">
    <xsd:annotation>
        <xsd:documentation>ESM customized response Body</xsd:documentation>
    </xsd:annotation>
    <xsd:complexContent>
        <xsd:extension base="etcML:ResponseBodyType">                     608
            <xsd:sequence>                                                606
                <xsd:element name="RowSet" type="RowSetType"
                minOccurs="0" maxOccurs="1" />
                <xsd:element name="Properties"
                type="PropertiesType" minOccurs="0" maxOccurs="1" />
            </xsd:sequence>
        </xsd:extension>                                                  610
    </xsd:complexContent>
</xsd:complexType>

<xsd:complexType name="ParameterType">
    <xsd:complexContent>
        <xsd:extension base="etcML:ParameterType">                        614
            <xsd:sequence>                                                612
                <xsd:element ref="etcML:RequestedFields" minOccurs="1"
                maxOccurs="1" />                                          616
                <xsd:element ref="etcML:StartRow" minOccurs="0"
                maxOccurs="1" />
                <xsd:element ref="etcML:MaxRowCount" minOccurs="0"
                maxOccurs="1" />                                          618
                <xsd:element ref="etcML:DisplayRowCount" minOccurs="0"
                maxOccurs="1" />
                <xsd:element name="RowSet" type="RowSetType"
                minOccurs="0" maxOccurs="1" />
            </xsd:sequence>
        </xsd:extension>
    </xsd:complexContent>
<xsd:complexType>
```

FIG. 6B 4/10

620
```
<xsd:complexType name="PropertiesType">
    <xsd:complexContent>
        <xsd:extension base="etcML:TicketingRecordSetType">
            <xsd:sequence maxOccurs="unbounded" minOccurs="1">
                <xsd:element name="Property" type="FieldType" />
            </xsd:sequence>
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>
```
622

628
```
<xsd:complexType name="RowSetType">
    <xsd:complexContent>
        <xsd:extension base="etcML:TicketingRecordSetType">
            <xsd:sequence maxOccurs="unbounded" minOccurs="1">
                <xsd:element name="Row" type="RowType" />
            </xsd:sequence>
            <xsd:attribute name="name" type="xsd:string" />
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>
```
629

623
```
<xsd:complexType name="FieldType">
    <xsd:sequence>
        <xsd:element name="name" type="xsd:string" />
        <xsd:element name="value" type="xsd:string" />
    </xsd:sequence>
</xsd:complexType>
```
624, 626

630
```
<xsd:complexType name="RowType">
    <xsd:sequence minOccurs="0">
        <xsd:element name="Column" type="ColumnType" minOccurs="0"
    maxOccurs="unbounded" />
        <xsd:element name="RowSet" type="RowSetType" minOccurs="0"
    maxOccurs="unbounded" />
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string" />
    <xsd:attribute name="rowNumber" type="xsd:positiveInteger" />
</xsd:complexType>
```
632, 634

636
```
<xsd:complexType name="ColumnType">
    <xsd:complexContent>
        <xsd:extension base="FieldType">
            <xsd:sequence>
                <xsd:element name="enums" type="EnumsType" minOccurs="0" />
                <xsd:element name="metadata" type="MetadataType" minOccurs="0" />
            </xsd:sequence>
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>
```
638

640
```
<xsd:complexType name="EnumsType">
    <xsd:sequence maxOccurs="unbounded" minOccurs="1">
        <xsd:element name="enum" type="xsd:string" />
    </xsd:sequence>
</xsd:complexType>
```

FIG. 7A 5/10

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xml:lang="en-us" version="1.0" elementFormDefault="unqualified"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" attributeFormDefault="unqualified"
targetNamespace="http://www.ibm.com/v1/etcML"
xmlns="http://www.ibm.com/v1/etcML" xmlns:Q1="http://www.ibm.com/etc">                    700

<xsd:complexType name="etcRootType">                                                    704
    <xsd:sequence minOccurs="1" maxOccurs="1">
        <xsd:element name="Transactions" type="TransactionsContainerType"
        minOccurs="0" maxOccurs="1" />                                                  702
    </xsd:sequence>
    <xsd:attribute name="ID" type="xsd:ID" use="optional" />
</xsd:complexType>

<xsd:complexType name="TransactionsContainerType">                                      708
    <xsd:choice minOccurs="1" maxOccurs="1">
        <xsd:element name="Request" type="TransactionRequestType"
        minOccurs="0" maxOccurs="1"></xsd:element>                                      706
        <xsd:element name="Response" type="TransactionResponseType"
        minOccurs="0" maxOccurs="1"></xsd:element>                                      710
    </xsd:choice>
</xsd:complexType>

<xsd:complexType name="TransactionRequestType">                                         714
    <xsd:complexContent>
        <xsd:extension base="TransactionType">                                          716
            <xsd:sequence>
                <xsd:element name="SystemID" type="ProviderType"
                                                minOccurs="0"
            maxOccurs="1"></xsd:element>                                                712
                <xsd:element name="TransactionType"
                type="ProviderActionType" minOccurs="1" maxOccurs="1">
                </xsd:element>
                <xsd:element name="Parameters"
                type="ParameterType"></xsd:element>
            </xsd:sequence>                                                             718
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>

<xsd:complexType name="TransactionType">
    <xsd:attribute name="userID" type="xsd:string" use="required" />
    <xsd:attribute name="password" type="xsd:string" use="optional" />
    <xsd:attribute name="timeStamp" type="xsd:dateTime" use ="required" />              720
    <xsd:attribute name="languageCode" type="LanguageCodeType" use="required" />
    <xsd:attribute name="countryCode" type="CountryCodeType" use="required" />
    <xsd:attribute name="timeZone" type="TimeZoneType" use="required" />
</xsd:complexType>

<xsd:simpleType name="ProviderType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="e-ESM61"/>                                              724
        <xsd:enumeration value="e-ESM44"/>                                              726
    </xsd:restriction>                                                                  722
</xsd:simpleType>
```

FIG. 7B 6/10

```
<xsd:complexType name="TransactionFilteredRequestType">
    <xsd:complexContent>
        <xsd:extension base="TransactionRequestType">
            <xsd:sequence>                                    732
                <xsd:element ref="Filters" minOccurs="0"
                    maxOccurs="1"></xsd:element>
                <xsd:element ref="Sort" minOccurs="0"                 734
                    maxOccurs="1"></xsd:element>
            </xsd:sequence>
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>                                            730

<xsd:element name="Sort">
    <xsd:complexType>
        <xsd:sequence maxOccurs="1" minOccurs="1"
            <xsd:element ref="SortOrder" minOccurs="1"
            maxOccurs="unbounded" />                          738
        </xsd:sequence>                                       736
    </xsd:complexType>
</xsd:element>

<xsd:element name="SortOrder" type="SortOrderType" />

<xsd:complexType name="SortOrderType">
    <xsd:sequence minOccurs="1" maxOccurs="1">
        <xsd:element ref="Value" minOccurs="1"
maxOccurs="1"></xsd:element>                                  742
        </xsd:sequence>                    744
        <xsd:attribute name="operator"
            type="SQLGroupByOperatorType"></xsd:attribute>
</xsd:complexType>

<xsd:element name="Value" type="xsd:string"></xsd:element>

<xsd:simpleType name="SQLGroupByOperatorType">
    <xsd:restriction base="xsd:string">                748
        <xsd:enumeration value="Ascending"></xsd:enumeration>
        <xsd:enumeration value="Descending"></xsd:enumeration>
    </xsd:restriction>                                        746
</xsd:simpleType>                  750

<xsd:element name="Filters">
    <xsd:complexType>
        <xsd:sequence maxOccurs="unbounded">  754
            <xsd:element ref="Filter" minOccurs="0"
            maxOccurs="unbounded" />                          752
            <xsd:element ref="Filters" minOccurs="0"                  756
            maxOccurs="unbounded" />
            </xsd:sequence>                    758
            <xsd:attribute name="operator"
            type="SQLConditionJoinOperatorType" use="required" />
```

FIG. 7C 7/10

760
```
<xsd:simpleType name="SQLConditionJoinOperatorType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="And">   762
        </xsd:enumeration>
        <xsd:enumeration value="Or">   764
        </xsd:enumeration>
    </xsd:restriction>
</xsd:simpleType>
```

```
<xsd:element name="Filter" type="FilterType" />
```

768
```
<xsd:complexType name="FilterType">
    <xsd:sequence minOccurs="0" maxOccurs="unbounded">
        <xsd:element ref="Value" minOccurs="1" maxOccurs="unbounded" />
    </xsd:sequence>
    <xsd:attribute name="key" type="xsd:string" use="required" />
    <xsd:attribute name="operator" type="SQLConditionOperatorType"   770
    use="required" />
</xsd:complexType>
```

772
```
<xsd:simpleType name="SQLConditionOperatorType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="Equal"></xsd:enumeration>
        <xsd:enumeration value="GreaterThan"></xsd:enumeration>
        <xsd:enumeration value="LessThan"></xsd:enumeration>
        <xsd:enumeration value="GreaterThanOrEqualTo"></xsd:enumeration>
        <xsd:enumeration value="LessThanOrEqualTo"></xsd:enumeration>
        <xsd:enumeration value="NotEqualTo"></xsd:enumeration>
        <xsd:enumeration value="Like"></xsd:enumeration>
        <xsd:enumeration value="In"></xsd:enumeration>
        <xsd:enumeration value="Between"></xsd:enumeration>
        <xsd:enumeration value="NotIn"></xsd:enumeration>
        <xsd:enumeration value="NotBetween"></xsd:enumeration>
    </xsd:restriction>
</xsd:simpleType>
```

774
```
<xsd:complexType name="TransactionResponseType">
    <xsd:complexContent>
        <xsd:extension base="TransactionType">
            <xsd:sequence minOccurs="1" maxOccurs="1">
                <xsd:element name="SystemID" type="ProviderType"
            minOccurs="0" maxOccurs="1"></xsd:element>
                <xsd:element name="TransactionType"
            type="ProviderActionType" minOccurs="1"
        maxOccurs="1"></xsd:element>
                <xsd:element name="ErrorCode"
            type="ProviderErrorCodeType"   778
                minOccurs="1" maxOccurs="1" />
                <xsd:element name="ResponseDescription"
            type="xsd:string" minOccurs="1" maxOccurs="1" />
                <xsd:element name="Body" type="ResponseBodyType"   776
            minOccurs="0" maxOccurs="1" />
            </xsd:sequence>
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>
```

```
780 <xsd:simpleType name="ProviderErrorCodeType">
      <xsd:restriction base="xsd:string">
        <xsd:enumeration value="0">                                  782
          <xsd:annotation>
            <xsd:documentation xml:lang="en-us">Successful           784
            transaction</xsd:documentation>
          </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="10000">                              786
          <xsd:annotation>
            <xsd:documentation xml:lang="en-us">System
788         failure</xsd:documentation>
          </xsd:annotation>
        </xsd:enumeration>
      </xsd:restriction>
    </xsd:simpleType>

  </xsd:schema>
```

FIG. 7D

800

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema targetNamespace="http://www.ibm.com/v1/etcML"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://www.ibm.com/v1/etcML" attributeFormDefault="unqualified"
elementFormDefault="unqualified">

<xsd:redefine schemaLocation="etcml.xsd">
  820 <xsd:simpleType name="ProviderActionType">
        <xsd:restriction base="ProviderActionType">
          <xsd:enumeration value="add" />
          <xsd:enumeration value="delete" />
          <xsd:enumeration value="get" />
          <xsd:enumeration value="list" />
          <xsd:enumeration value="validate" />
          <xsd:enumeration value="modify" />
        </xsd:restriction>
      </xsd:simpleType>

  822 <xsd:simpleType name="ProviderErrorCodeType">
        <xsd:restriction base="ProviderErrorCodeType">
          <xsd:minInclusive>0</xsd:minInclusive>
          <xsd:maxInclusive>12000</xsd:maxInclusive>
          </xsd:restriction>
      </xsd:simpleType>
</xsd:redefine>
</xsd:schema>
```

FIG. 8

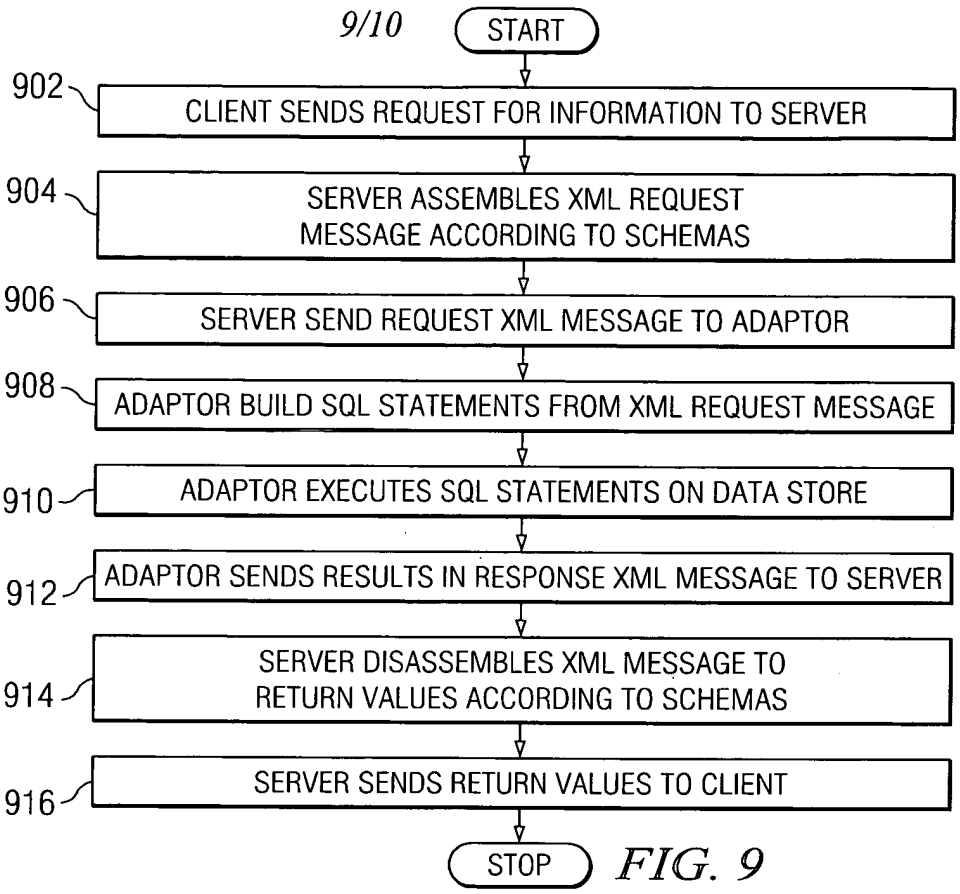

FIG. 9

```
<?xml version="1.0" encoding="UTF-8"?>
<esm:esmML xmins:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmins:esm="http://www.ibm.com/esm" xmins:etcML="http://www.ibm.com/v1/etcML" ID="1">
  <Transactions>
    <Request xsi:type="esm:ObjectRequestType" countryCode="fr" languageCode="FR"
    timeZone="" esm:agentID="EXAV" esm:userTrace="false">
      <SystemID>eESM630</SystemID>
      <TransactionType>list</TransactionType>
      <Parameters xsi:type="esm:ParameterType">
        <etcML:RequestedFields>
          <RequestedField>ProblemTicket.id</RequestedField>
          <RequestedField>ProblemTicket.Person.id</RequestedField>
        </etcML:RequestedFields>
        <etcML:StartRow>1</etcML:StartRow>
        <etcML:DisplayRowCount>10</etcML:DisplayRowCount>
      </Parameters>
      <etcML:Filters operator="AND">
        <etcML:Filter key="ProblemTicket.id" operator="NotEqualTo">
          <etcML:Value>L</etcML:Value>
        </etcML:Filter>
      </etcML:Filters>
      <esm:TransactionTarget>ProblemTicket</esm:TransactionTarget>
    </Request>
  </Transactions>
</esm:esmML>
```

1002, 1004, 1008, 1006, 1010, 1011, 1012, 1014, 1016, 1018, 1022, 1020, 1026, 1024, 1000, 1028

FIG. 10

```
[11/14/03 15:55:57.057 CST] Servlet.Engine.Transports : 0:DEBUG                    1101
com.ibm.etc.cct.adapter.esm63.ejb.ESMAdapter63Bean.DataAccessManager - SQL
      1102          1104          1106
Stmt:SELECT PROBLEMS.PROBLEM_ID, PROBLEMS.FIRST_PEOPLE_ID FROM
1108                                                              1110
TSD630UC.PROBLEMS PROBLEMS WHERE 1=1 AND ( ( PROBLEMS.PROBLEM_ID <>?)
FETCH FIRST 201 ROWS ONLY

[11/14/03 15:55:57.057 CST] Servlet.Engine.Transports : 0:DEBUG
com.ibm.etc.cct.adapter.esm63.ejb.ESMAdapter63Bean.DataAccessManager-
setParameters(List parameters, PreparedStatement iPS):Param Type: CHAR Value:L  1112

<?xml version="1.0" encoding="UTF-8"?>
<esm:esmML xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"                  1120
xmlns:esm="http://www.ibm.com/esm" ID="1">
1122 <Transactions>
1124 <Response xsi:type="esm:ObjectResponseType" countryCode="fr" language code="FR"
timeStamp="2003-11-14T22:04:24Z" timeZone="">
    <SystemID>eESM630</SystemID>
    <TransactionType>list</TransactionType>                                  1128
1132 <ErrorCode>0</ErrorCode>                                                1126
    <ResponseDescription>success</ResponseDescription>                       1130
1134 <Body xsi:type="esm:ObjectResponseBodyType">
1136 <esm:RowSet displayRowCount="10" fetchCount="201" maxRowCount="200"
startRow="1" totalCount="200" esm:name="ProblemTicket">                      1137
1138 <esm:Row esm:name="ProblemTicket" esm:rowNumber="1">
1139 <esm:Column>
      <esm:name>ProblemTicket.id</esm:name>                                  1140
      <esm:value>SITEA-00000034          </esm:value>                        1142
    </esm:Column>
    <esm:Column>
1141 <esm:name>ProblemTicket.Person.id</esm:name>                             1144
      <esm:value>470000003</esm:value>                                       1146
    </esm:Column>
  </esm:Row>
  <esm:Row esm:name="ProblemTicket" esm:rowNumber="2">
    <esm:Column>
      <esm:name>ProblemTicket.id</esm:name>
      <esm:value>SITEA-00000089          </esm:value>
1148 </esm:Column>
    <esm:Column>
          <esm:name>ProblemTicket.Person.id</esm:name>
          <esm:name>470000003</esm:value>
    </esm:Column>
  </esm:Row>
 </esm:RowSet>
 </Body>
</Request>
</Transactions>
</esm:esmML>
```

FIG. 11